

## **AMC Regulation 11-47**

### **Army Programs:**

## **Army Oil Analysis Program (AOAP)**

U.S. Army Materiel Command  
9301 Chapek Road  
Fort Belvoir, VA 22060-5527  
19 Jun 2006

**UNCLASSIFIED**

DEPARTMENT OF THE ARMY  
HEADQUARTERS, UNITED STATES ARMY MATERIEL COMMAND  
9301 CHAPEK ROAD, FORT BELVOIR, VA 22060-5527

AMC REGULATION  
NO. 11-47

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Army Programs

ARMY OIL ANALYSIS PROGRAM (AOAP)

Local supplementation of this regulation is authorized.

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1. **Purpose.** This regulation prescribes U.S. Army Materiel Command (AMC) policy, assigns responsibilities, and provides guidance for Army Oil Analysis Program operations within the Command. It applies to Headquarters, U.S. Army Materiel Command (AMC), AMC Life Cycle Management Commands (LCMCs), subordinate installations, activities, and Separate Reporting Activities (SRAs).

2. **Policy.**

a. AMC will implement equipment oil analysis testing as a quality management tool to enhance safety, conserve resources and to extend the life of major assemblies and components. All matters relating to AOAP, to include issue resolution, procedures, research and development, and requests for assistance will be processed through Program Manager (PM), AOAP.

b. AR 750-1, Army Materiel Maintenance Policy, outlines DA policy and assigns responsibilities for the AOAP. The AOAP is mandatory for all Army aircraft. The AOAP is also applicable to selected non-aeronautical equipment.

c. AR 700-132, Joint Oil Analysis Program, outlines policy and procedures for providing and receiving inter-service oil analysis support between the Army, Navy, and Air Force. Location

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\*This regulation supersedes AMC Regulation 11-47 dated 17 February 1995.

and regional support areas for interservice oil analysis laboratories are listed in TB 43-0211, Army Oil Analysis Program (AOAP) Guide for Leaders and Users. Laboratory information may also be obtained through the AOAP Hot Line, DSN 645-0869 or (256) 955-0869.

d. This regulation establishes the AMC depot oil analysis quality assurance (QA) program. Laboratory oil analysis testing will be implemented as a QA management tool for depot reconditioned equipment, prior to release of the equipment to a field unit or return to the supply system.

### **3. Responsibilities.**

a. USAMC G-3 shall:

- (1) Exercise staff supervision over the AOAP within AMC.
- (2) Serve as the Commanding General's representative to DA for all matters related to the AOAP.
- (3) Charter the DA AOAP program management office.
- (4) Serve as the Commanding General's representative for the Army OPR (Office of Primary Responsibility) on joint service matters involving the Joint Oil Analysis Program (JOAP).
- (5) Ensure USAMC organizations participate in the AOAP and depot oil analysis quality assurance program.
- (6) Ensure AOAP budget and funding requirements are provided adequate priority consideration and management support to preclude adverse impact on mission operations and service to the war fighter.

b. Commander, USAMC LOGSA, shall:

- (1) Appoint Program Manager, AOAP.
- (2) Provide management guidance and administrative support for the day-to-day operations of the AOAP program management office.
- (3) Serve as the Army representative to the Joint Oil Analysis Program Executive Committee.
- (4) Consolidate and coordinate Army-related joint service oil analysis issues and interservice actions for review at the executive management level.

c. Program Manager, AOAP, shall:

- (1) Accomplish responsibilities outlined in Para 8-2, Chapter 8, AR 750-1.
- (2) Coordinate with the U.S. Army Training and Doctrine Command (TRADOC) activities on matters of training, military occupational specialty structure, and doctrine.
- (3) Provide AOAP management summary reports, laboratory Oil Analysis, Recommendation, and Feedback reports and equipment analytical test data, collected in the OASIS data system as required to LCMCs.
- (4) Program and budget for the fabrication of mobile AOAP laboratories.
- (5) Maintain, and where required, ensure development of wear-metal evaluation criteria for components enrolled in the AOAP and depot oil analysis QA program.
- (6) Plan and coordinate research and development to improve oil analysis technology and application. PM AOAP, will provide evaluation and validation support for research of on-board, on-site, and hand-held oil analysis testing devices.
- (7) Facilitate approval for recommended changes to sampling intervals and components enrolled in the AOAP.
- (8) Provide management guidance, technical supervision, and assistance to all Army activities regarding the AOAP.
- (9) Conduct annual visits to field units and laboratories to monitor AOAP operations.
- (10) Ensure compliance with AR 700-132/AFR 400.68/OPNAVINST 4731.1.
- (11) Review, recommend, and approve AOAP laboratory equipment requirements. Coordinate laboratory equipment repairs, as required.
- (12) Develop and maintain a prototype Performance Work Statement (PWS) for use in solicitation documents for the contract operation of AOAP laboratories. Assist in the review of contractor bids/proposals and evaluate the technical qualifications of contractor personnel to satisfy the terms of the contract.
- (13) Coordinate AOAP laboratory personnel training as required. Ensure AOAP laboratories and the personnel employed in the laboratories are certified.
- (14) Review, recommend, and coordinate efforts for the establishment or closure of AOAP laboratories, as required.
- (15) Convene an annual in-process review with all major Army commands to review program status and develop AOAP out-year plans.

(16) Serve as the application system developer for the Oil Analysis Standard Interservice System (OASIS).

d. Commanders, LCMCs shall:

(1) Recommend equipment components and systems for enrollment into or removal from the AOAP.

(2) Recommendations for new enrollments in the AOAP will be made using AMC Form 2889-R-E, AOAP Candidate Enrollment Nomination Data Sheet (see Appendix C). Completed forms will be submitted to the PM AOAP, for staffing and to facilitate approval. Recommendations to remove equipment from the AOAP will be made by written request, supported by justification, to PM AOAP.

(3) Recommend equipment oil sampling interval frequencies to PM AOAP.

(4) Approve laboratory wear-metal evaluation criteria for LCMC managed equipment enrolled in the AOAP.

(5) Designate a command point of contact on all matters regarding the AOAP.

(6) Review AOAP test data and laboratory maintenance recommendation reports (DA Form 3254-R, Oil Analysis Recommendation and Feedback) to evaluate equipment failure trends and the need to modify oil change frequencies in equipment lubrication orders (LOs).

(7) Ensure Statements of Work include Data Item Description DI-MISC-80390 (Oil Analysis Report) or the requirements for initial wear-metal evaluation criteria on new weapon system components and major assemblies. Evaluation criteria will be developed using an atomic emission spectrometer.

(8) Incorporate oil-sampling valves into engineering design requirements for legacy weapon systems and new weapons systems that will not have embedded inline or online lubrication diagnostics capabilities.

(9) Provide materiel failure feedback to PM AOAP, for components and major assemblies requiring depot-level teardown analysis resulting from AOAP laboratory recommendations (DA Form 3254-R).

(10) USAMC AOAP laboratories will support customers in a regional area designated by PM AOAP. These laboratories will comply with testing and documentation requirements outlined in TM 38-301 and as directed by PM AOAP.

(11) Ensure requirements for AOAP are included in depot maintenance work requirements, LOs, and other technical publications.

(12) Ensure AMC LCMC Depots with oil analysis/chemical laboratories shall:

(a) Implement oil analysis testing as a QA procedure for equipment undergoing depot reconditioning.

(b) Analyze oil samples from overhauled, reworked and rebuilt oil wetted components and major assemblies processed through depot production facilities.

(c) AMC depots will determine which production equipment and components will have quality assurance oil samples analyzed.

(d) Appoint an AOAP monitor/coordinator for actions relating to the AOAP and depot QA oil analysis procedures.

(e) Incorporate oil analysis requirements in Management Control Evaluation Checklists (AR 11-2, Management Control).

(f) Fund for depot laboratory test instruments and automation equipment.

e. Commander, U.S. Army Tank-automotive and Armaments Command (TACOM), shall serve as equipment item manager for all standard-type classified AOAP Depot laboratory test instruments and mobile laboratories.

#### **4. Procedures.**

a. Functional procedures for the AOAP are outlined in DA Pamphlet 750-8, The Army Maintenance Management System (TAMMS) Users Manual and DA Pamphlet 738-751, Functional Users Manual for the Army Maintenance Management System (TAMMS-A).

b. TB 43-0211, Army Oil Analysis Program (AOAP) Guide For Leaders And Users, provides a general overview of the oil analysis program identifies Army aviation and non-aeronautical equipment enrolled in the program, including the scheduled oil sampling/testing interval for each item. It provides organizational leaders and equipment users a guide through each step of the AOAP process, from taking the oil sample through final evaluation of laboratory maintenance recommendations at the various levels of maintenance. Depot designated equipment items tested for quality assurance that are not part of the Army-wide AOAP program, will not be listed in TB 43-0211.

c. Unit tactical deployment:

(1) AOAP support service will be provided by the designated regional AOAP laboratory facility.

(2) When a unit is deployed and oil analysis service is not available, the equipment unit will change component oil and service filters in accordance with the equipment LO or lubrication information in the appropriate technical manuals.

(3) During deployment operations, the area of responsibility (AOR) Army Service Component Command (ASCC) will establish AOAP service operations in concert with its maintenance plan/strategy. PM, AOAP, will provide advice and assistance to the ASCC service support organization.

(4) When required by the Task Force Commander, Army National Guard mobile laboratories will be temporarily deployed in support of field operations as part of the maintenance plan/strategy.

(5) U.S. Army Forces Command (FORSCOM) is responsible for mobilization and deployment of the mobile laboratories. Upon arrival in the theater of operation, the laboratory and mobile AOAP team is under the operational control of the AMC Logistics Support Element.

(6) PM AOAP will provide technical guidance for the deployment of mobile laboratories and establishment of temporary fixed-based laboratories. When available, PM AOAP, will coordinate with the Navy and Air Force for initial interservice oil analysis support for deployed forces, until AOAP resources can be established in the tactical area of operations.

d. USAMC depot laboratories may analyze oil samples from on-station equipment that is enrolled in the Army-wide AOAP. USAMC depot laboratories are not authorized to analyze oil samples from equipment enrolled in the Army-wide AOAP, for off-station customers.

e. Contract maintenance programs. Contractor maintenance facilities processing Army equipment items and components that are enrolled in the AOAP or identified for depot level quality assurance testing will ensure oil samples are provided to an AOAP servicing laboratory for analysis to validate component acceptance.

The proponent for this regulation is the United States Army Materiel Command Logistics Support Activity. Users are invited to send comments and suggested improvements on DA Form 2028 (Recommended Changes to Publications and Blank Forms) to Army Oil Analysis Program Office, (AMXLS-MO), U.S. Army Materiel Command, Logistics Support Activity, Building 3661, Redstone Arsenal, AL 35898.

FOR THE COMMANDER:

//Signed//  
 WILLIAM E. MORTENSEN  
 Lieutenant General, USA  
 Chief of Staff

DISTRIBUTION:

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## **APPENDIX A**

### **REFERENCES**

AR 11-2	Management Control
AR 700-132	Joint Oil Analysis Program (JOAP)
AR 750-1	Army Materiel Maintenance Policy
DA Pamphlet 750-8	The Army Maintenance Management System (TAMMS) Users Manual
DA Pamphlet 738-751	Functional Users Manual for the Army Maintenance Management System – Aviation (TAMMS-A)
TM 38-301-1	Joint Oil Analysis Program Manual, Volume I, Introduction, Theory, Benefits, Customer Sampling Procedures, Programs and Reports.
TM 38-301-2	Joint Oil Analysis Program Manual, Volume II, Spectrometric and Physical Test Laboratory Operating Requirements and Procedures.
TM 38-301-3	Joint Oil Analysis Program Manual, Volume III, Laboratory Analytical Methodology and Equipment Criteria (Aeronautical)
TM 38-301-4	Joint Oil Analysis Program Manual, Volume IV, Laboratory Analytical Methodology and Equipment Criteria (Non-Aeronautical)
TB 43-0211	AOAP Guide for Leaders and Users



## APPENDIX B

### SECTION I - ABBREVIATIONS

AOAP	Army Oil Analysis Program
DA	Department of the Army
DOD	Department of Defense
JOAP	Joint Oil Analysis Program
LO	Lubrication Order
LOGSA	Logistics Support Activity
LCMC	Life Cycle Management Command
OASIS	Oil Analysis Standard Interservice System
PM	Program Manager
QA	Quality Assurance

### SECTION II – TERMS

- a. AOAP. A DA program that is part of a DOD-wide effort to detect impending equipment component failures and determine lubricant condition through online and laboratory evaluation of in-service oil samples.
- b. Wear-Metal Evaluation Criteria. Quantitative part-wear expressions of wear metals and/or lubricant characteristics, against which the results of oil analysis are compared to determine the condition of a component or lubricant and the necessity for maintenance examination.
- c. Oil Analysis. A laboratory test or series of tests (spectrometric and physical property) that provide indicators of equipment component part wear and lubricant condition by applying methods of quantitative measurement of wear metals and the detection of contaminants in an oil sample.
- d. OASIS. A standard oil analysis laboratory automation system integrated with the laboratory test instruments and provides each oil laboratory with the capability of providing routine management reports. OASIS is the standard oil analysis data system for Navy Oil Analysis Program and AOAP laboratories.
- e. On-Condition Oil Change. An AOAP process to conserve lubricant resources. AOAP monitors lubricants for the presence of contaminants, abrasive part-wear, and review of prescribed physical properties.

## APPENDIX C

<b>AOAP CANDIDATE ENROLLMENT NOMINATION DATA SHEET</b> <small>(AMC-R 11-47)</small>														
COMMAND:					OFFICE SYMBOL:					DATE:				
<b>END ITEM</b>														
NOMENCLATURE:														
MODEL:					EQUIPMENT IDENTIFICATION CODE (EIC):									
NATIONAL STOCK NUMBER (NSN):					COST NEW:									
POPULATION DENSITY:					REMARKS:									
<b>COMPONENT</b>														
TYPE: <small>(Transmission, Engine, etc.)</small>					MODEL:									
NATIONAL STOCK NUMBER (NSN):					COST NEW:									
OVERHAUL COST:					REPAIR COST:									
FILTER NSN:					FILTER COST:									
TYPE LUBRICANT:					LUBRICANT COST:									
MAN-HOURS TO CHANGE OIL:					LUBRICATION ORDER #:									
HARDTIME OIL CHANGE INTERVAL:					LUBRICANT CAPACITY:									
PROJECTED OPERATIONAL LIFE:					WARRANTY PERIOD:									
CRITICAL PARTS AND METAL COMPOSITION:														
<b>ATOMIC EMISSION SPECTROMETER WEAR-METAL GUIDELINES</b>														
	Norm	Marg	High	Avg		Norm	Marg	High	Avg		Norm	Marg	High	Avg
Fe					Mg					Mo				
Ag					Ti					Si				
Al					Pb					B				
Cr					Sn					Na				
Cu					Ni					Zn				

AMC FORM 2889-R-E  
JAN 95

Legend: Instructions for Army personnel completing AMC Form 2889-R-E (AOAP Candidate Enrollment Nomination Data Sheet)

Block Title:

1. Command. Enter the Major Army Command, PEO, or PM office preparing the report.
2. Office Symbol: Enter the office symbol of the submitting office.
3. Date. Enter the date (DDMMYY).

End Item:

4. Nomenclature. Enter the complete nomenclature of the end-item being recommended for enrollment.
5. Model. Enter the equipment mission, design, and series.
6. Equipment Identification Code (EIC). Enter the equipment EIC.
7. National Stock Number (NSN). Enter the NSN for the end-item.
8. Cost New. Enter the current replacement cost of the end-item.
9. Population Density. Enter the total number of weapon systems in the inventory or anticipated to have oil samples analyzed.
10. Remarks. Enter any information on the end-item or the component to be tested that may be beneficial to the laboratory analyst, e.g., special alloy or type oil.

Component:

11. Type. Enter the component (Engine, transmission, etc).
12. Model. Enter the component model designation.
13. National Stock Number (NSN). Enter the NSN for the component.
14. Cost New. Enter the current replacement cost of the component.
15. Overhaul Cost. If available/established, enter the materiel developer 'standard' cost to completely overhaul the component.
16. Repair Cost. If available/established, enter the materiel developer 'standard' cost to repair the component.
17. Filter NSN. Enter the NSN for the filter used on the component.
18. Filter Cost. Enter the cost for a new/replacement filter.

19. Type Lubricant. Enter the type oil used in the component.
20. Lubricant Cost. Enter the cost of the lubricant (Example: Qt=\$1.12).
21. Man-Hours to Change Oil. Enter the man-hours, from the Maintenance Allocation Chart required changing oil in the component.
22. LO #. Enter the LO for the equipment.
23. Hard-Time Oil Change Interval. Enter the miles/calendar time established to change oil, currently listed in the Lubrication Order.
24. Lubricant Capacity. Enter the lubricant capacity for the component.
25. Projected Operational Life. Enter the projected operational time for the component before overhaul.
26. Warranty Period. If applicable, enter the warranty period for the component.
27. Critical Parts and Metal Composition. List the critical parts for the component and their metallurgic composition.
28. Atomic Emission Spectrometer Wear-Metal Guidelines. If available, enter the standard wear rates and alarm levels for each type metal for the component critical parts.